

### Remarks

This Amendment follows the Response submitted March 6, 2006 and assumes entry into the Official File of both the March 6<sup>th</sup> Response and the September 26, 2005 Amendment. This Amendment is also submitted in response to the Advisory Action dated April 4, 2006.

The Applicants have amended Claims 1, 2, 10 and 12 to recite that there is 0.45% or less of Si. This change is inherently supported by virtue of the fact that the originally filed range was 2.0% or less of Si. All of the entire new range of 0.45 or less of Si is encompassed in the original 2.0% or less of Si range. Thus, the Applicants respectfully submit that support is inherent. Also, the Applicants invite the Examiner's attention to Table 1 of their Specification on page 52, wherein 0.45 is directly supported by Steel No. 5. The Table also includes additional lower quantities of Si such as 0.35, 0.25 and 0.15, for example. This range is thus further supported by actual Examples in the Applicants' Specification.

The Applicants also commend MPEP 2163.05, part III to the Examiner's attention. That portion of the MPEP makes it crystal clear that inherent support is completely sufficient to meet the requirements of 35 U.S.C. §112.

MPEP 2163.05 also discusses the *Wertheim* case, which is discussed below. The Applicants also note the later and similar *Ralston Purina* case. The citations for those cases are as follows: *In re Wertheim*, 191 U.S.P.Q. 90 (CCPA 1976) and *Ralston Purina Co. v. Far-Mar-Co., Inc.*, 227 U.S.P.Q. 177 (CAFC 1985). In the *Wertheim* case, the applicants sought the advantage of the filing date of a Swiss application describing a step of a process achieving a solid concentration of "25 to 60%" and gave specific examples of 36% and 50%. The U.S. claims, which had been rejected, called for a smaller range of concentration "between 35% and 60%."

In construing the question whether the U.S. claim was entitled to the right of priority, the Court applied §112. The Court also considered whether persons skilled in the art would consider processes within the smaller range to be part of the Appellant's invention and would be led by the disclosure to so conclude. Accordingly, notwithstanding the lack of literal support, the Court held that there was actual support, even though the corresponding disclosure did not disclose a 35% lower limit of the U.S. claims.

In *Ralston Purina*, a grandparent disclosure set forth a temperature range of 212° to 380°F. The later application claimed a range of 212° to 310°F. The Court of Appeals for the Federal Circuit applied the test as to whether the narrow range was sufficiently described in the later application to comprise a suggestion to those skilled in the art that such a range was embraced by the original invention. The Court applied the description requirement of 35 U.S.C. §112 in stating that the applicant's claimed range "involves [nothing] more than claiming a portion of that which has already been described.: The Court proceeded to allow the narrower range despite the lack of literal support in the later specification.

We respectfully submit that both *Wertheim* and *Ralston Purina* are controlling in this case. Their clear mandate stands in support of the Applicants' claimed range of 0.45% or less of Si. The Applicants therefore respectfully submit that the amendment to Claims 1, 2, 10 and 12 with respect to the 0.45% or less of Si is in complete compliance with 35 U.S.C. §112.

The Applicants have also amended Claims 1, 2, 10 and 12 to change the N/Al ratio from the previously claimed 0.6 or more range to the earlier original range of 0.3 or more. However, the Applicants have added new Claims 16 – 19 that claim the N/Al ratio of 0.6 or more.

In that regard, the Applicants note the Examiner's comments in the Advisory Action as follows:

Applicants' argument with respect to 35 USC §112, 1<sup>st</sup> paragraph rejection to N/Al ratio is noted. But, there is no literal support or inherent support because the original ratio is so broad. Moreover, there is no evidence that N/Al ratio 0.3 has different property from 0.6.

The Applicants respectfully submit that the position that there is no literal support or inherent support because the original ratio is so broad is not well taken and is erroneous. The Applicants' original ratio was 0.3 or more. This literally supports any range of 0.3 up to infinity. The fact that it is broad is absolutely irrelevant as to whether 0.6 is supported. It is inherently supported by definition.

The erroneous nature of the position is further supported by reference to Table 1 in the Applicant's Specification, wherein various N/Al ratios are set forth. Steel 23 has a low ratio of 0.31, which is within, but very close to the originally claimed range of 0.3 or more. There are a variety of additional ratios including, but not limited to, 0.86, 1.09, 1.27, 1.76, 2.36, 3.48 and so on. Those Examples provide additional support for the N/Al ratio of 0.6 or more. In fact, the Applicants' respectfully submit that the Examples point out or include steels that have N/Al ratios below 0.6 in support of the original range of 0.3 and ranges close to and far above 0.6. For example, the 0.88 N/Al ratio is relatively close to 0.6. However, further ratios are provided that are actually multiples of the 0.6 ratio including 1.88, which is more than three times the 0.6 ratio and up to 3.63, which is more than six times the ratio.

The Applicants therefore respectfully submit that, when taken as a whole, their original disclosure both literally and inherently supports the Applicants' claimed range in the new claims of 0.6 or more. There is no basis upon which an argument rejecting that claimed range under 35 U.S.C. §112 can be based on the notion that there is no literal or inherent support because the original ratio is so broad. This is contrary to the facts on this record.

The Advisory Action further points out that: “Moreover, there is no evidence that N/Al ratio at 0.3 has different property from 0.6.” Again, the Applicants respectfully submit that this is irrelevant. In the context of §112, there need not be any evidence that there are different properties. The properties can be the same or different. It makes no difference in the §112 context. The only question is whether there is support for the 0.6 or more ratio. The Applicants have already established that there is more than ample support.

The Advisory Action in the context of the prior art takes the position that:

The claimed “less than 0.02%” is no different from 0.02% as disclosed by Maid.

That statement is not supported by simple mathematics. 0.02 is a particular point on a numerical line. The claimed range of “less than 0.02” is a series of points on that same line. However, there is no overlap of the 0.02 point with the range of points encompassed by less than 0.02. While it may be true that the point of 0.02 may be close to the claimed range of less than 0.02, there is no overlap and there is no commonality in any of the points between the range and the single 0.02 point. Therefore, the claimed range is, in fact, mathematically different from 0.02. To take the position set forth in the Advisory Action is directly contrary to the laws of mathematics. It is therefore unsupported.

In any event, the Applicants agree that Maid does not disclose the claimed N/Al ratio, in the amount of dissolved N as well as the ferrite grain size. The Applicants also respectfully submit that Maid fails to disclose the Applicants’ claimed range of less than 0.02% of Al. Instead, Maid discloses 0.02 – 0.10% Al. This is set forth in multiple locations such as in the Abstract, Column 1, line 50, Table 1 and Claim 1 as set forth in Column 6 at line 9. Other than the repetition of the above stated 0.02 – 0.10% range, there is no discussion of Al in the remaining text of Maid. That is simply all of the disclosure there is with respect to Al. However, it is clear that the

Applicants' claimed range of less than 0.02% of Al is not disclosed by Maid. The Applicants also repeat that "less than 0.02%" does not overlap "0.02 – 0.10."

The rejection also takes the position that the amount of dissolved N "would have been inherently possessed by alloy steel of Maid since the claimed N content and other alloying elements' contents, microstructure, tensile properties, hot rolling and baked hardening steps are overlapped." The Applicants respectfully submit that this is inaccurate. The Applicants have already established that the alloying elements contents do not overlap and are not the same. Maid does not disclose the claimed amount of less than 0.02% of Al. Instead, Maid discloses a larger range of 0.02 – 0.010% of Al. Therefore, there is an alloying element that is particularly important and that does not overlap with Maid. Also, there is no establishment that the microstructure of Maid is the same as that as claimed. That is merely speculation in the rejection not supported by the prior art relied upon.

There is a further important fact associated with the amount of Al that is not appreciated by Maid. As previously noted, the Applicants discovered that there is a significant correlation between the amount of Al, the amount of dissolved N and the size of ferrite grains. The Applicants have further discovered that there is a significant correlation that involves the amount of Si. In particular, the Applicants have discovered that, in view of the ready combination of Si with N, the amount of Si, which now is limited to 0.45% or less, provides a reduced opportunity to combine with N. As a consequence, the lesser quantity of N allows for an increase in the N/Al ratio. None of these individual points taken alone and certainly none of the points taken in combination are taught or suggested by Maid in any way. The Applicants therefore respectfully submit that the Examiner has failed to produce evidence on the record that can support a *prima facie* obviousness. It must be remembered that the prior art must provide teachings and suggestions to

make modifications to the prior art before an obviousness rejection can be supported. There are utterly no teachings or suggestions in Maid (or Tosaka) to make the theoretical modifications suggested in the rejection (and not the prior art).

Instead, the rejection takes the position that the “Applicant must show that there are substantial, actual differences between the properties of the claimed compound and the prior art compound.” That position relies on an outdated case that is factually distinguishable from the facts in this situation. The Applicants respectfully submit that the rejection applies an improper test of patentability under §103. The PTO has the burden of demonstrating that there are teachings or suggestions in the prior art to make modifications that would lead to the claimed subject matter. The rejection does not provide and/or identify such teachings or suggestions. Instead, the rejection relies on factually incorrect “statements,” i.e., not evidence, about what the prior art discloses and applies those incorrect statements to form an erroneous *prima facie* argument of obviousness.

The Applicants respectfully submit that the rejection must be based on teachings and suggestions of the prior art that are also based on actual facts in the prior art. The facts are, for example, that Maid discloses a range of 0.02 – 0.10% Al. There is not one teaching and not one suggestion in Maid that the range of Al could or should be below 0.02. Careful scrutiny of the entire Maid document reveals that there is not one word that would lead one skilled in the art to turn away from the disclosed range of Maid. Therefore, there are no teachings or suggestions to move toward the Applicants’ claimed range.

The same thing can be said for the Applicants’ claimed range of 0.45% or less of Si. In sharp contrast, Maid discloses a range of 0.5 – 1.0% Si. Again, careful scrutiny of the entire Maid disclosure reveals that there is not one word that would suggest to one skilled in the art that

the amount of Si should be lowered below the stated range. There are also no suggestions that doing so would or could provide any advantage. To suggest otherwise is merely speculation not supported by the actual Maid disclosure.

Moreover, there is a complete failure on the part of Maid to appreciate the above-mentioned significant correlation between the amount of Si, the amount of Al, the amount of dissolved N and the size of the ferrite range. This is a synergistic effect brought about by the Applicants' combination of components that is not disclosed, not taught and not suggested by Maid.

The rejection turns to Tosaka to provide teachings concerning the claimed ferrite grain size. The Applicants respectfully submit that one skilled in the art would not do this. The Applicants previously noted that one skilled in the art would not make the hypothetical combination for several reasons, one including the fact that Maid discloses a hot-rolled steel strip while Tosaka discloses a cold-rolled steel strip. The rejection has disregarded those facts because the "instant product has not excluded cold-working." This statement completely misunderstands the Applicants' position. The Applicants have no intention and no need to state that the Applicants' steel sheet is a cold-rolled steel sheet. In fact, the Applicants actually claim hot-rolled steel sheets.

The point is that one skilled in the art would not make the combination of Tosaka with Maid because they disclose different kinds of steel strips that are well known to have very different characteristics and serve very, very different functions. On the one hand, Maid discloses hot-rolled steel strips while, on the other hand, Tosaka discloses cold-rolled steel strips. One skilled in the art would not make the hypothetical combination because the two kinds of strips are notoriously different. Thus, there is no need for the Applicants to amend their claims to

recite cold-rolled steel sheets. The Applicants' position of non-obviousness is based on the point that one skilled in the art would not make the hypothetical combination as set forth in the rejection because of the completely different types of steel sheets that would have to be combined with one another to hypothetically produce the Applicants' claimed subject matter.

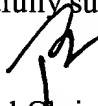
In any event, the Applicants respectfully submit that Tosaka is non-enabling with respect to providing disclosure, teachings or suggestions to those skilled in the art to achieve a ferrite phase with an average grain size of 10  $\mu\text{m}$  or less. The reason is that Tosaka provides no teachings with respect to ferrite structure or grain size in the context of hot rolling. Tosaka is only able to achieve fine grains of ferrite after cold rolling, not after hot rolling. The Applicants have carefully scrutinized the entire Tosaka disclosure and there is not one word in that disclosure that would enable one skilled in the art to achieve a ferrite phase with an average grain size of 10  $\mu\text{m}$  or less as recited in the solicited claims based on the Tosaka disclosure. Those teachings simply do not exist in Tosaka and Tosaka is accordingly non-enabling.

Tosaka is further non-enabling with respect to the grain size, irrespective of the cold rolling versus hot rolling problem. In that regard, the Applicants invite the Examiner's attention to Tables 3, 5, 7, 9, 11 and 13, wherein a multiplicity of ferrite grain size diameters are shown based on experiments run in accordance with the teachings of Tosaka. Not a single example was able to achieve a grain size of 10  $\mu\text{m}$  or less even in the context of cold rolling, much less in the context of hot rolling as claimed by the Applicants. The Applicants therefore respectfully submit that this is further evidence of the complete non-enablement on the part of Tosaka with respect to the Applicants' claimed ferrite phase of an average grain size of 10  $\mu\text{m}$  or less in a hot-rolled sheet. Thus, even in one skilled in the art were to hypothetically combine Tosaka with Maid, one skilled in the art would still not be able to determine how to achieve the Applicants' specifically

claimed grain size in the ferrite phase. Withdrawal of the rejection based on the hypothetical combination of Tosaka with Maid is respectfully requested.

The Applicants respectfully submit that all of the solicited claims are allowable, inasmuch as one skilled in the art would not make the hypothetical combination as set forth in the rejection and, in any event, the resulting product would still be quite different from what the Applicants claim herein. As a consequence, the Applicants respectfully submit that the entire Application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,



T. Daniel Christenbury  
Reg. No. 31,750  
Attorney for Applicants

TDC:lh  
(215) 656-3381